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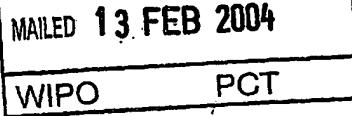
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NO1/7700 0.00-0324901.8

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1. Your reference

6.70.1052 UK - Case 21

2. Patent application number

(The Patent Office will fill in this part)

0324901.8

3. Full name, address and postcode of the or of each applicant (*underline all surnames*)INTERBREW S.A.
VARSTRAAT 94
B-3000 LEUVEN
BELGIUMPatents ADP number (*if you know it*)

If the applicant is a corporate body, give the country/state of its incorporation

A BELGIAN CORPORATION

08518714001

4. Title of the invention

METHOD FOR FILLING A BAG WITH AN ALCOHOL BEVERAGE

5. Name of your agent (*if you have one*)*"Address for service" in the United Kingdom to which all correspondence should be sent (*including the postcode*)*G.F. REDFERN & CO.
LYNN HOUSE
IVY ARCH ROAD
WORTHING
WEST SUSSEX. BN14 8BXPatents ADP number (*if you know it*)

1412002

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Country

Priority application number
*(if you know it)*Date of filing
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Number of earlier application

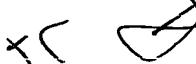
Date of filing
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- a) any applicant named in part 3 is not an inventor, or
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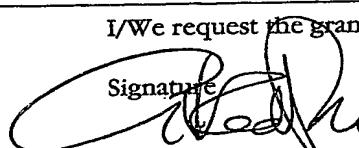
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I/We request the grant of a patent on the basis of this application.

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Date 24 October 2003

11. Name and daytime telephone number of person to contact in the United Kingdom

Mrs. S.M. Camp
01903 820466

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- 1 -

METHOD FOR FILLING A BAG WITH AN ALCOHOL BEVERAGE

Field of the Invention

The present invention relates to a method of filling a bag with an alcohol beverage and in particular, relates to a method of filling a bag contained in a keg with beer.

Background of the Invention

It is known to contain alcohol, such as wine in bags contained in a cardboard type container. Further, it is known to use a bag inserted into a keg for storing beer in the bag. In the case of a beer keg, pressure is applied to the bag to dispense the beer from the bag and out of the keg. Further, the bag is inserted into the keg container prior to the beer being filled into the bag.

The filling of beer into the bag, has two potential problems. One problem is that the bag still may contain air that mixes with the beer and spoils the beer. Another problem is that the filling of the beer directly into the bag has been known to rupture the bag.

Summary of the Invention

It is an object of the present invention to provide a method for

filling a bag with an alcohol beverage or beer that reduces the chances of bag rupture.

The present invention relates to a method for filling a bag contained in a container with an alcohol beverage wherein air located between the bag and container is evacuated from the container. The bag is then inflated with an inert gas prior to filling the bag with the beverage. The inert gas is vented from the bag as the bag is filled with the beverage.

By inert gas, it is meant a gas that has an inert chemical reaction when mixed with the alcohol beverage so as not to spoil or adversely effect the quality of the beverage.

By initially evacuating air from the container prior to bag inflation, the present invention reduces the occurrence of air pockets being trapped between the bag and container during bag inflation. Further, the inflation of the bag requires less pressure thereby reducing stress placed on the bag during inflation and hence reducing risk of bag rupture. Alternatively, if the gas is inserted into the bag under at a non-lessened pressure, the fill rate of the bag is not slowed down by venting of air from the container because the air has already been evacuated. These advantages may be further enhanced by continuing the evacuating step during the bag inflation step.

It should be understood that by evacuating air from the container it is meant to reduce the volume of air in the container outside of the bag and in effect create a vacuum in the container that facilitates the inflation of the bag with the inert gas.

Further, by initially inflating the bag with the inert gas prior to filling the bag with the beverage, the bag is less susceptible to rupture during beverage filling. Further the inert gas does not adversely react

with the beverage to spoil the beverage. Also, inflating the bag with inert gas acts to purge or mix any air trapped in the bag with the inert gas. During the venting step, the air is vented from the bag with the inert gas. As a consequence, there is less chance for air to be trapped in the bag and spoil the beverage in the bag.

Preferably the inert gas is CO₂ or nitrogen when the beverage is beer.

Preferably, the inert gas is vented from the bag during the step of filling the inflated bag with the beverage.

It is an aspect of the present invention to provide a method for filling a bag contained in a container with an alcohol beverage. The method comprises the steps of evacuating the container of air located between the container and the bag, inflating the bag with an inert gas for the beverage, filling the inflated bag with the beverage, and venting the inert gas from the bag.

Brief Description of The Drawings

For a better understanding of the nature and objects of the present invention reference may be had to the accompanying diagrammatic drawings in which:

Figure 1 is a front elevation view of a home beer dispensing apparatus in accordance with the present invention;

Figure 2 is a side elevation view of the home beer dispensing apparatus;

Figure 3 is broken away perspective view of the keg showing the valve and spear assembly mounted within the keg;

Figure 4 is a sectional side view of the valve and spear assembly as shown in Figure 3;

Figure 5 is a perspective view of the valve and spear assembly outside of the keg;

Figure 6 is a plan view of the valve body of the valve assembly; and,

Figures 7, 8, 9, 9a and 10 are simplified sectional views of the valve body showing valve operation.

Detailed Description Of The Invention

The present invention relates to a method of filling a bag with an alcoholic beverage and, in particular, relates to a method of filling a bag contained in a keg with beer.

Referring to Figures 1 and 2 there is shown a home beer dispensing apparatus, appliance or unit 10. The dispensing apparatus 10 is primarily intended for use in domestic kitchens but may also be used in utility rooms, garages, domestic bars, caravans etc. While the preferred embodiment relates to dispensing beer, alternatively carbonated solutions or other alcohol beverages may be dispensed by apparatus 10.

The home beer dispensing apparatus 10 has a front wall 12 and a dispensing tap 14 protruding forward of the front wall 12. A drip tray 16 also protrudes forward of the front wall 12 and is adapted to support an open glass container 18 below the dispensing tap 14. The home beer dispensing apparatus 10 further has a base 21 adapted to rest on a counter top. The front wall 12 is an extension of two pivoting side walls 20 which may be moved between closed and open positions to allow the keg 22 (see Figure 2 in broken lines) to be inserted into the housing of the home beer dispensing apparatus 10.

The housing of the home beer dispensing apparatus 10 further includes a top wall 24 and a rear wall 26. The rear wall 26 has a grill 30

that permits for air circulation within the home beer dispensing apparatus 10. An electrical cord 32 extends through the rear wall 26 of the apparatus 10 to provide a connection into a main electrical supply to supply electrical power to the electrical components housed within the unit 10. Alternatively, a 12 Volt DC supply input may be used.

The dispensing apparatus 10 has a cooling system 34 located behind and below keg 22 that is adapted to cool beer in keg 22 when keg 22 is placed into dispensing apparatus 10.

Referring now to Figures 3 through 6, the valve assembly 40 and spear 102 are shown.

The valve assembly 40 is adapted to fit into a raised collar aperture 42 of keg 22. The valve system or assembly 40 has an annular shaped body 46 that is secured in the aperture 42. The valve body 46 has an annular groove 47 and flange 49 that is adapted to extend above the keg 22 for mating with a tap dispensing adapter (not shown) connected to tap 14 (see Figures 1 and 2).

The valve body 46 has a first passageway 48, a second passageway 50, and a third passageway 52 spaced apart from each other and extending through the valve body 46. As best seen in Figure 6, the first passageway 48 is centrally disposed or located within the valve body 46 and the second and third passageways 50, and 52 are spaced radially of the first central passageway 48.

The valve assembly includes a first valve 54, a second valve 56 and a third valve 58. The first valve 54 is seated in the first passageway 48 for controlling the flow of the beverage or beer through the first passageway 48 into and out of the bag 44.

The second valve 56 is seated in the second passageway 50 for

controlling the flow of gas such as carbon dioxide through the second passageway 50 into and out of the bag.

The third valve 58 is seated in the third passageway 52 and controls the flow of gas through the third passageway 52 into and out of the keg 22 exterior to the bag 44. Alternatively valve 58 may be located through a wall of keg 22.

Each valve, 54, 56, and 58 has a valve actuator or stem 60 that effectively opens and closes the valve. The valve stem 60 extends away from the valve body 46 by a different predetermined distance for each of valves 54, 56 and 58. Each of the valves 54, 56 and 58 further includes a valve head 70 connected to the valve stem 68. The valve head 70 carries an O-ring 72 which is adapted to seal the valve head within the respective passageway. A spring 74 urges the valve head 70 into sealing engagement with its corresponding passageway. The valve stems 68 are accessible from outside the keg 22 for moving each valve head 70 into an open and closed position to respectively enable and inhibit fluid flow through passageways 48, 50 and 52.

The valve body 46 has an annular recessed groove 62 recessed in an inner wall 64 of the valve body 46. The inner wall 64 is positioned within the keg 22. The recessed groove 62 is adapted for receiving the neck 66 of bag 44 in press fit relation therewith. The annular recessed groove 62 has a diameter that surrounds the first and second passageways 48 and 50. The third passageway 52 is located outside of the diameter of the recessed groove 62 and as a result, the third passageway 52 is located outside of the bag 44.

The keg 22 has a collar flange 82 which defines the raised collar aperture 42, the valve body 46 has an outer peripheral wall 63 with a

recessed groove 61 extending around the outer wall 63. An intermediate ring or bung 80 is adapted to seat the valve body 46 within the raised collar aperture 42. The intermediate ring 80 has inner and outer walls 84, 86. The inner wall 84 has flange 88 extending inwardly thereof that is adapted to fit into the recessed groove 61 of the outer wall 63 of the valve body 46. The outer wall 86 of the intermediate ring 80 has a resilient barb 90 and a locking flange 92 spaced from the barb 90 so as to define a outer locating groove 94 into which the collar flange 82 of the keg 22 is held. The barb 90 is adapted to pass through the aperture 42 and spring back into locking engagement with the collar flange 82 so as to lock the valve assembly 40 in place. Special tools are required to remove the valve assembly 40 and the intermediate ring 80 from the collar flange 82 of the keg 22 once the keg 22 is returned to the brewery for refilling.

In order to ensure that the contents of the keg 22 have not been tampered with, the keg 22 has an anti-tamper ring 96 that overlays the intermediate ring 80, a portion of the keg 22 and a portion of the valve body 46. The intermediate ring 80 has an aperture 98 that passes completely through the intermediate ring 80 to provide a vent passageway. The anti-tamper ring 96 has a flange part 100 that is inserted into the vent aperture 98 of the intermediate ring 80. In the event the anti-tamper ring 96 is removed from the keg 22, vent aperture 98 is open and the contents or any pressure within the keg 22 is released. Further, as a pressure relief feature, the anti-tamper ring 96 is designed to release from aperture 98 when pressure in keg 22 exceeds a predetermined valve to vent pressurized air through aperture 98.

The valve system or assembly 40 and the spear assembly 102 provide a combination that may be removed for the purposes of recycling

of the valve assembly 40 and the spear assembly 102. The bag neck 66 can be removed from the valve assembly 40 so that this valve 40 and spear 102 assembly may be cleaned and reused with a new bag 44 and bag neck 66. The valve and spear assembly is shown as an independent assembly in Figure 5. In order to accommodate the spear 102, the first passageway 48 of the valve body 46 has a tubular extension 104 that extends downwardly or outwardly from the inner wall 64 of the valve body 46. The spear 102 comprises an elongated hollow tube which may have rounded bottom edges or bottom end 108 that extends the spear and the first passageway 48 of the valve body 46 towards the bottom of the keg 22 and the bottom of the bag 44. The hollow spear 22 has an outside diameter that fits inside the diameter of the tubular extension 104 of the first passageway 48 in an interference type of fit whereby the two parts may be secured together. The interference fit may be a tapering effect between the outer wall of the spear 102 and the inner wall of the tubular extension 104. Alternatively, a snap fit may be utilized.

Referring to Figure 7, the valve system 40 is shown with each of its first, second and third valves 54, 56 and 58 in a closed position. The valve stems 68 of each valve 54, 56 and 58 extends a different distance upwardly so that it may be activated in a selective manner described in relation to the method of filling the bag 66 with beer or alcohol beverage.

Referring to Figure 8, the valve system 40 is shown secured to the keg 22 with the bag 44 illustratively shown in a smaller circle within the keg 22. Initially, the bag is deflated when the valve assembly 40, spear 102 and bag 44 are inserted into the keg 22. Next, an engagement ring 110 engages the actuator 70 of the first valve 54 and at the same time an engagement ring 112 engages the actuator 70 of the third valve 58.

Initially third valve 58 is opened and third passageway 52 is connected to a vacuum pump (not shown) which draws a vacuum through third passageway 52 to evacuate air trapped in the keg 22 outside of the bag and creates a partial vacuum in the keg 22. Next, engagement ring 110 opens first valve 54 and carbon dioxide is blown under pressure in through the first valve passageway 48. The carbon dioxide inflates the bag 44 such that the bag is inflated to fill the volume of the keg 22. Further, the carbon dioxide mixes with air trapped in bag 10. Due to the previous evacuation of air from the keg 22, the bag 44 readily expands within the keg 22. Alternatively, the step of evacuating the air from keg 22 may continue during the step of filling the bag 44 with carbon dioxide.

Referring to Figure 9, the next step is to insert or fill the bag 44 with beer. Preferably, the larger valve or central valve is used. That is the first valve 54 is opened and at the same time the second valve 56 is opened. In this embodiment, the beer enters through the first passageway 48 and the carbon dioxide exits through the second passageway 50 removing any air mixed with the carbon dioxide gas.

Referring to Figure 9A, an alternative arrangement is shown where the bag 44 is loaded with beer in an inverted position. In this position, the smaller valve or second valve 56 is used to insert the beer into the container and the first valve 54 is used to permit the carbon dioxide to exit the bag 44.

Referring Figure 10, an adapter or keg adapter 114 is mounted onto the valve assembly 40 to open valves 54 and 58. A dispensing tube 118 is connected to the first passageway 48 whereby, when dispense tap 14 opens, the beer flows up through hollow spear 102 and out the first passageway 48 to the tap 14. At the same time, in order to facilitate this

flow of beer, the exterior wall of the bag 44 is pressurised. Pressurization is achieved by a pressure system (not shown) which is attached to the third passageway 52 and with the third valve 58 open permits pressurized air to enter through the third passageway 52.

The different predetermined heights or extensions of the valve actuator 60 of each of the first, second and third valves 54, 56 and 58 permits for different valves to be actuated or opened by the dispenser ring in a selective manner.

WHAT IS CLAIMED IS:

1. A method of filling an alcohol beverage into a bag contained in a container, the method comprising the steps of:
 - evacuating the container of air located between the container and the bag;
 - inflating the bag with an inert gas selected from gasses that do not adversely react with the beverage;
 - filling the inflated bag with the beverage; and,
 - venting the inert gas from the bag.
2. The method of claim 1 wherein the step of evacuating the bag of air continues during the step of inflating the bag with an inert gas.
3. The method of claim 1 wherein the inert gas is CO₂.
4. The method of claim 1 wherein the beverage is beer.
5. The method of claim 1 wherein the inert gas is vented from the bag during the step of filling the inflated bag with the beverage.
6. The method of claim 1 wherein the step of inflating the bag inflates the bag to a volume corresponding to that of the container.
7. The method of claim 1 wherein the step of inflating the bag brings the bag into contact with inside walls of the container.
8. The method of claim 1 wherein the container is a beer keg that supports the bag relative thereto.
9. A method of filling an alcohol beverage into a bag contained in a container having a valve system mounted with the bag and container, and the valve system has first, second and third valves, the method comprising the steps of:
 - evacuating the container of air located between the container and

the bag by applying a vacuum to the container through the first valve;

inflating the bag through the second valve with an inert gas selected from gasses that do not adversely react with the beverage;

filling the inflated bag with the beverage through one of the second and third valves; and,

venting the inert gas from the bag through another of the second and third valves.

10. The method of claim 9 wherein the step of evacuating the bag of air continues during the step of inflating the bag with an inert gas.

11. The method of claim 9 wherein the inert gas is CO₂.

12. The method of claim 9 wherein the beverage is beer.

13. The method of claim 9 wherein the inert gas is vented from the bag during the step of filling the inflated bag with the beverage.

14. The method of claim 9 wherein the step of inflating the bag inflates the bag to a volume corresponding to that of the container.

15. The method of claim 9 wherein the step of inflating the bag brings the bag into contact with inside walls of the container.

16. The method of claim 9 wherein the container is a beer keg that supports the bag relative thereto.

METHOD FOR FILLING A BAG WITH AN ALCOHOL BEVERAGE

ABSTRACT

A method for filling a bag contained in a container with an alcohol beverage evacuates air located between the bag and the container from the container. The bag is inflated with an inert gas prior to filling the bag with the beverage. The inert gas is vented from the bag as the bag is filled with the beverage. By evacuating air a partial vacuum is created in the container that facilitates the step of inflating the bag with inert gas.

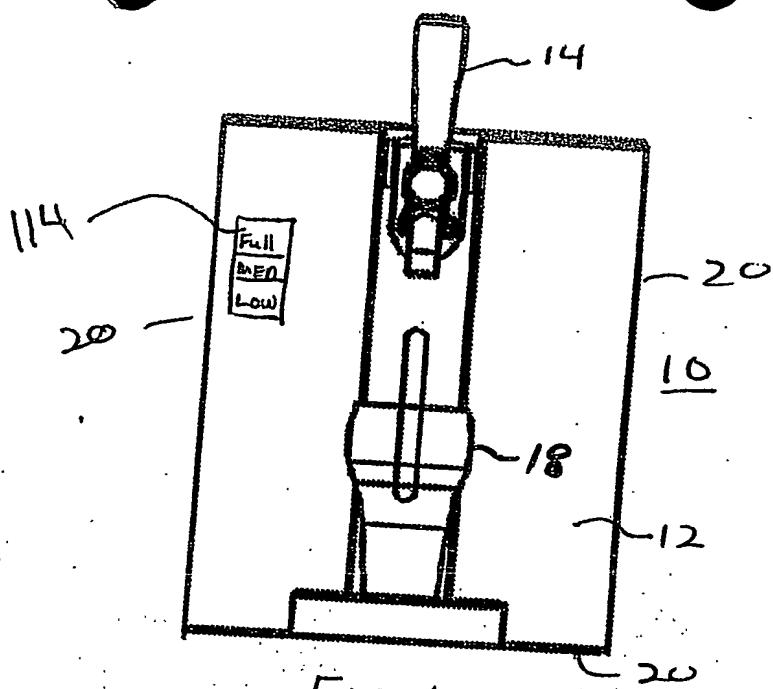


FIG. 1

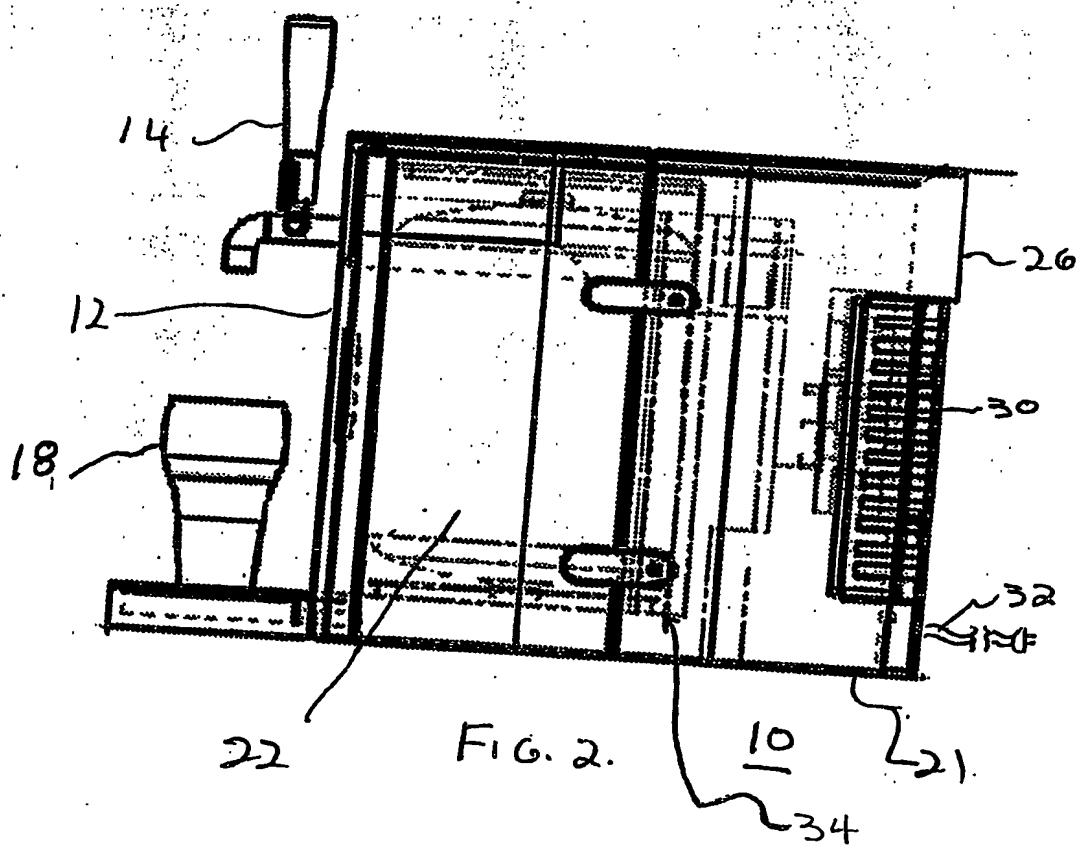
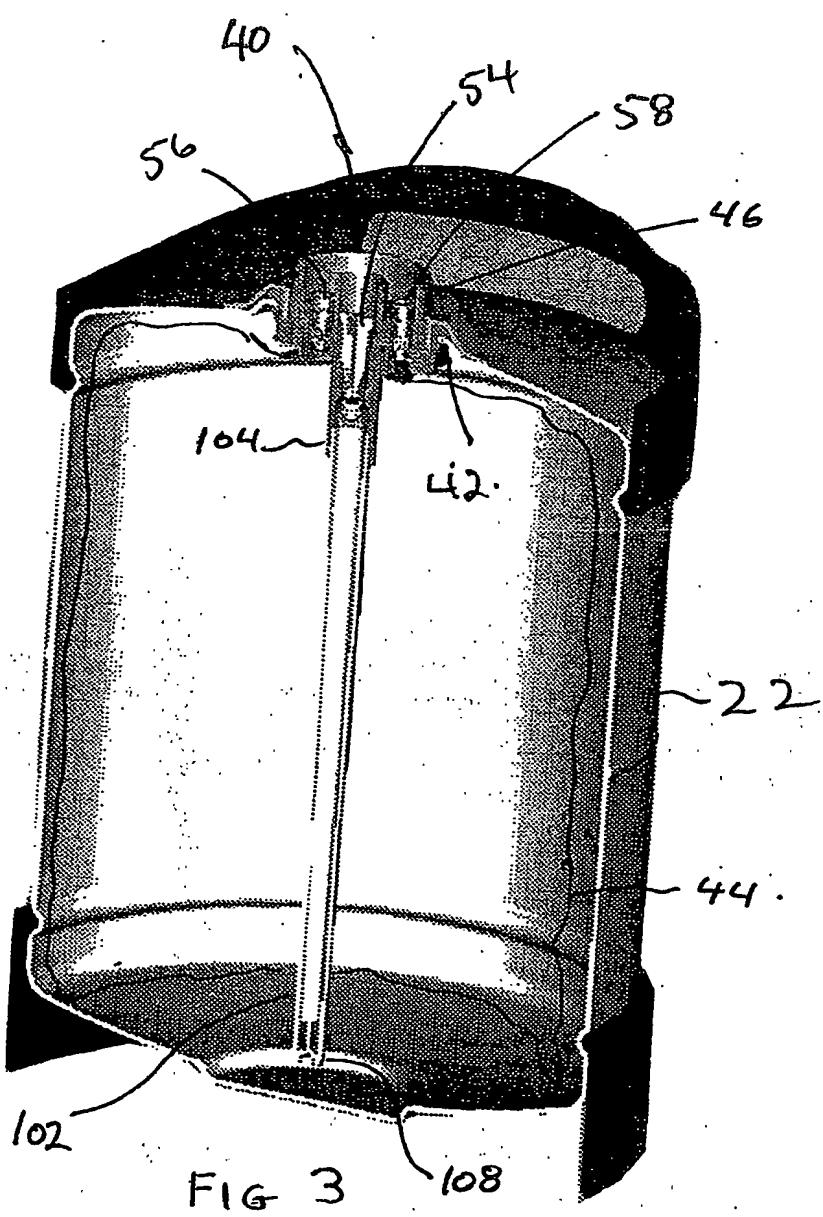


FIG. 2.



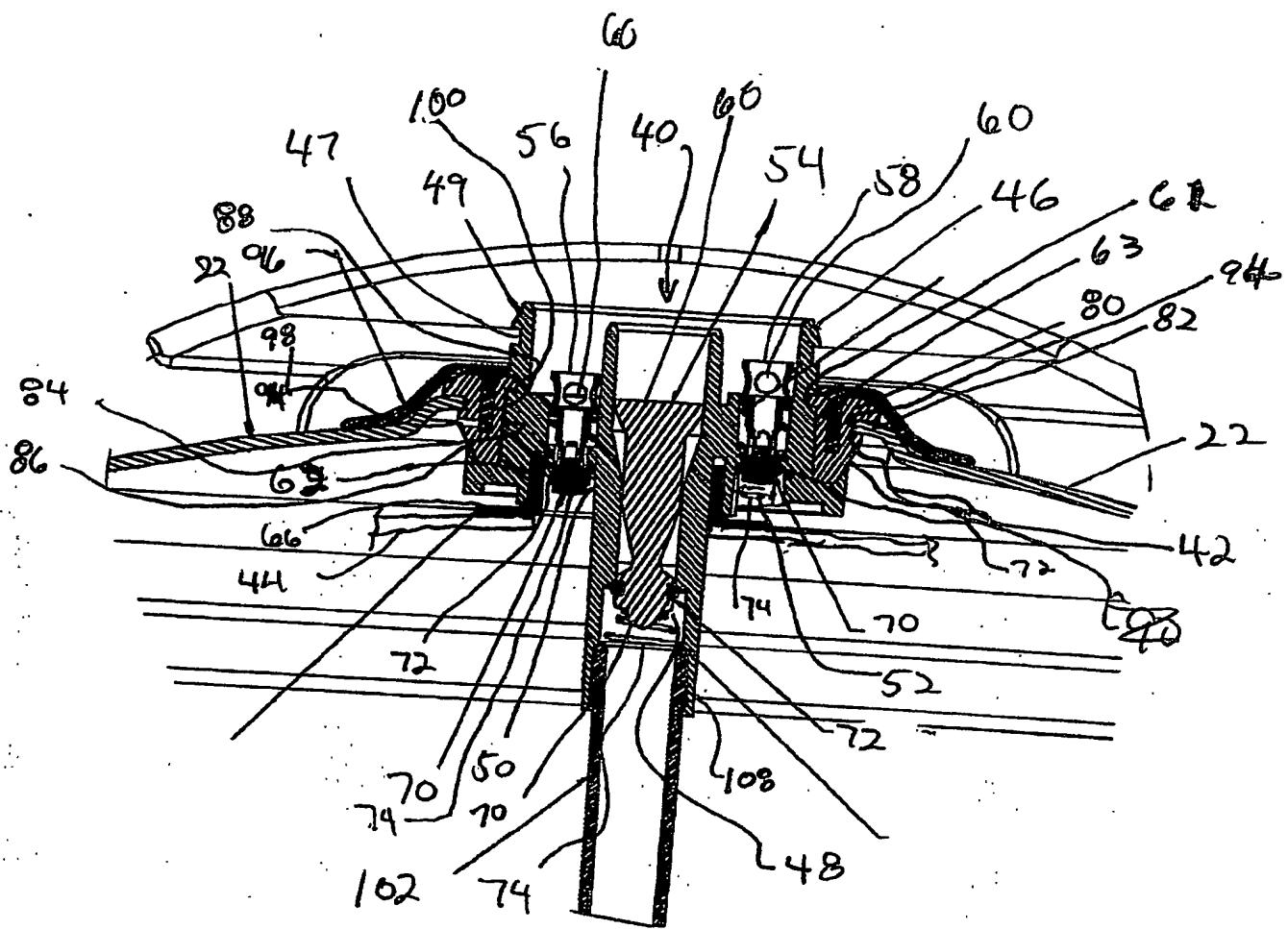


FIG. 4

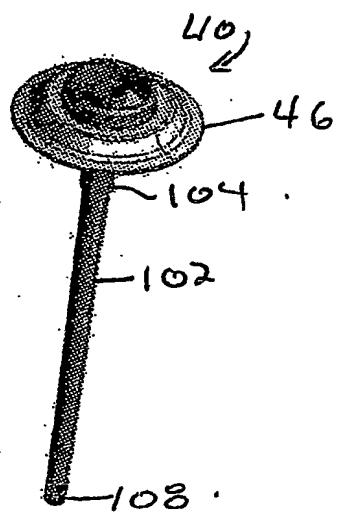


FIG. 5

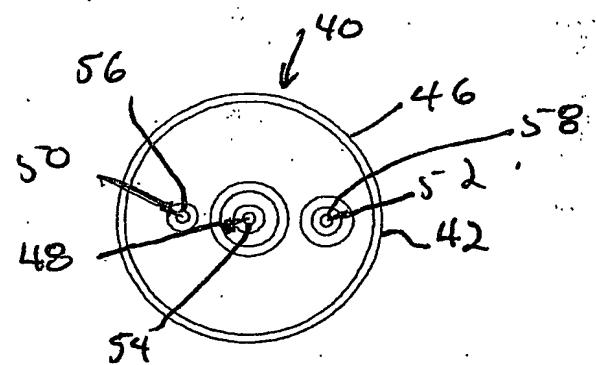


FIG. 6.

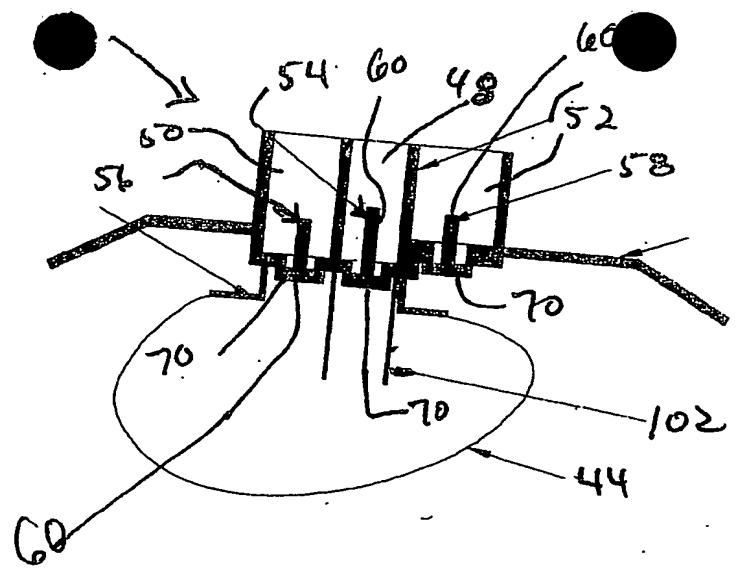


FIG. 7

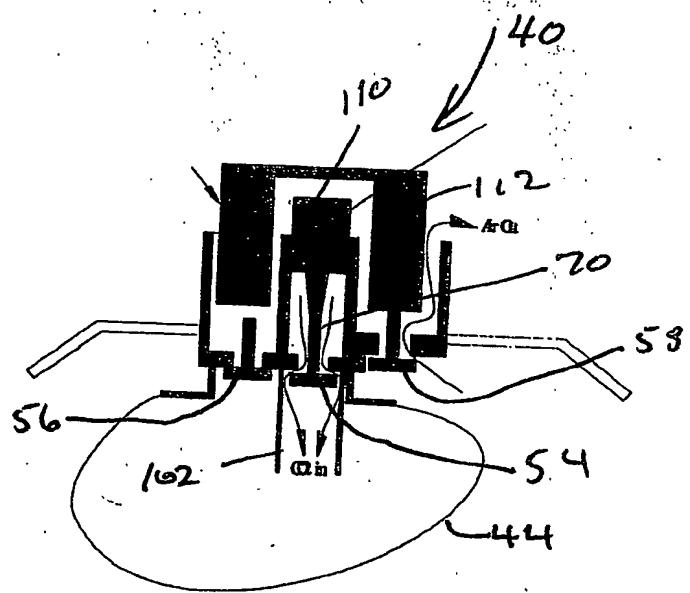


FIG. 8

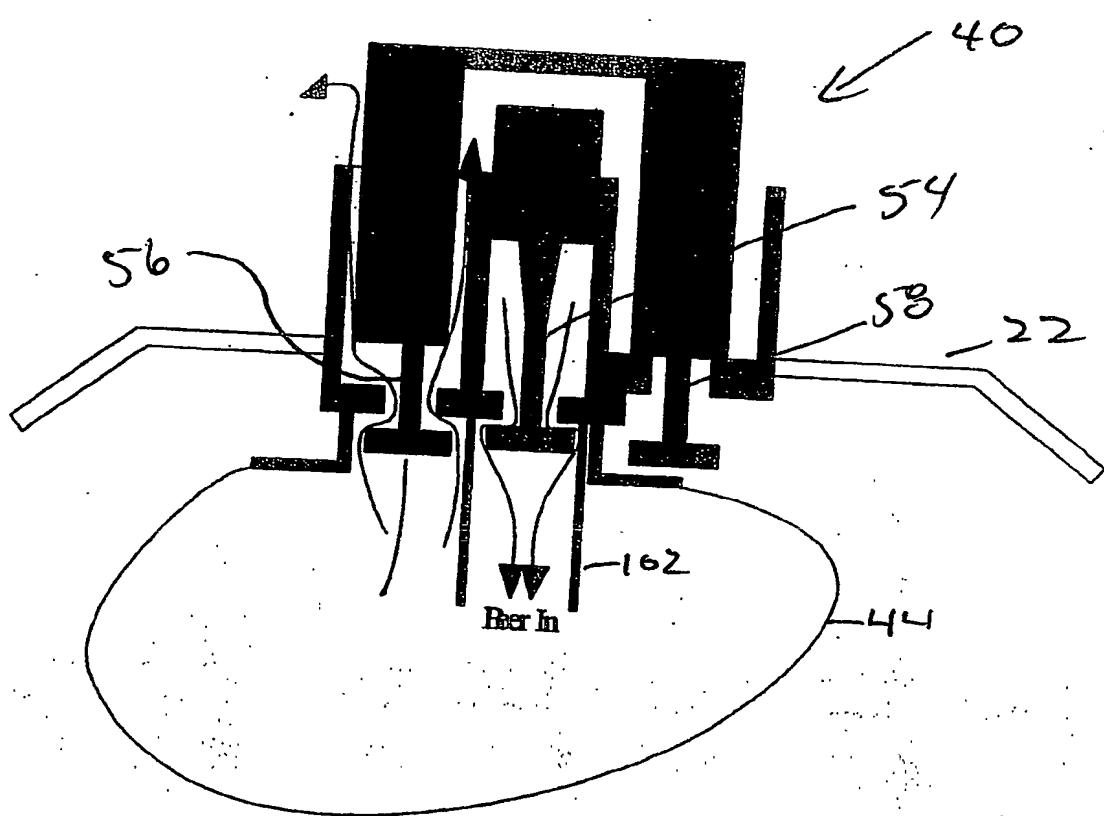


FIG. 9

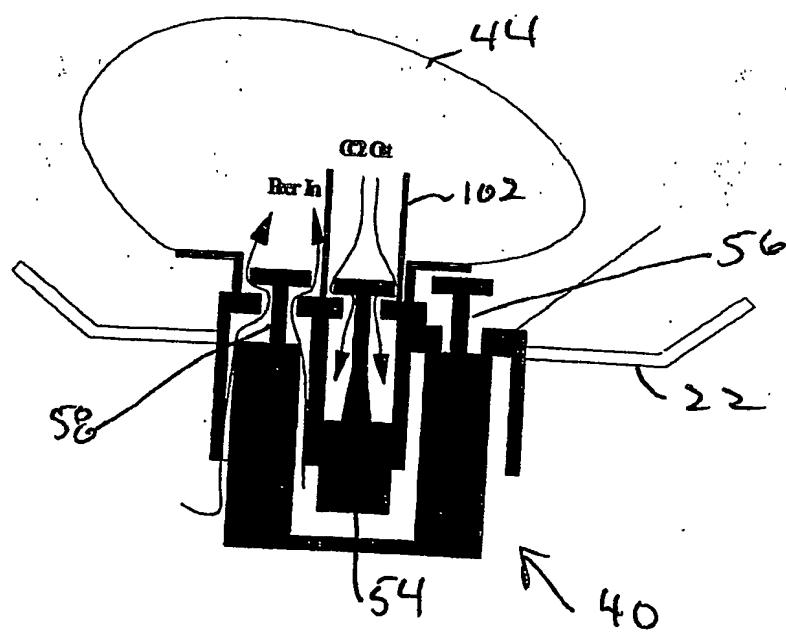


FIG. 9a

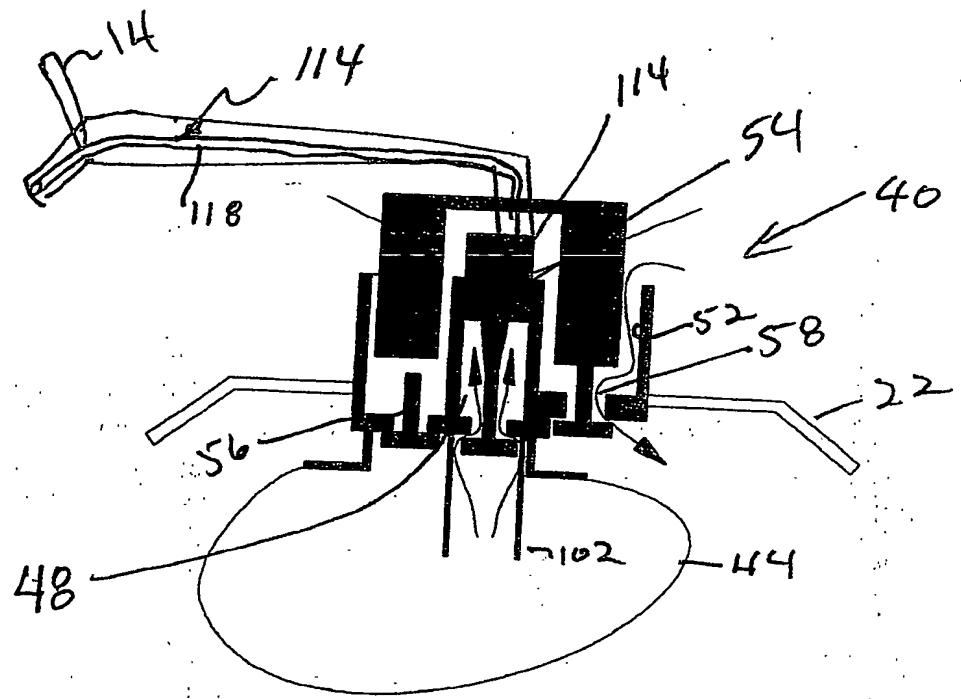


FIG. 10.

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